

Remarks

Claims 1-16 are pending in this application. Applicants have amended claims 1 and 6 to clarify the present invention. Applicants respectfully request favorable reconsideration of this application.

The Examiner rejected claims 1, 8, 9, 13, 14, and 16 under 35 U.S.C. § 102(b) as being anticipated by U.S. patent 4,984,172 to Luminari. The Examiner rejected claims 2, 7, 10, and 15 under 35 U.S.C. § 103(a) as being unpatentable over Luminari in view of U.S. patent 4,168,489 to Ervin. The Examiner rejected claims 3-6, 11, and 12 under 35 U.S.C. § 103(a) as being unpatentable over Luminari in view of Ervin and further in view of U.S. patent 5,490,100 to Kableskov.

Luminari does not disclose the present invention as recited in independent claims 1 and 9 since, among other things, Luminari does not disclose a method or apparatus for imaging characteristics of an object that includes detecting light reflected from the object, detecting light exiting from the object after penetrating a surface of the object and being scattered by the object, creating a digital representation of the object based on the reflected and scattered light, and reading out from the digital representation information on a geometric profile of the object and information on the light scattered by the object in a predetermined area around the profile. Luminari does not disclose utilizing or measuring dispersion/scatter measurements. Rather, Luminari discloses detecting surface defects employing a triangulation system that utilizes the intensity, defined at col. 3, lines 3-16, as "chromatic discontinuities on the surface of the panel,

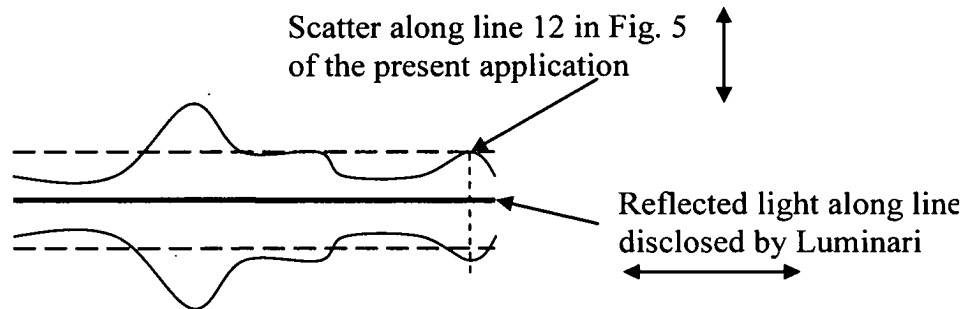
such as dark knots, glue or paint stains" Luminari also discloses that the system utilizes the triangulation shape results are used to determine defects in the inspected object, such as plywood panels.

Luminari, at col. 3, lines 32-40, states, "a CCD chamber or the like) capable of resolving the said beam into a series of points, the position of each of which is determined with respect to the system coordinates X,Y,Z and measurement is made of the ratio between the light-intensity of each point and the mean of all points of the beam." This passage makes clear that Luminari discloses a system that measures reflected intensity of a laser signal along the laser (the maximum intensity in each column of the image). A comparison is then made between each value and the average value. In this way areas with dark reflection are detected.

On the other hand, according to the present invention as recited in claims 1 and 9, dispersion is measured across the laser line direction. Figs. 5 and 6 illustrate a cross-section taken along line 12 in Fig. 5 to produce the profile shown in Figs. 5 and 6. The intensity of the light is measured a distance away from a maximum intensity in the orthogonal direction as indicated by line 12 in Fig. 5 compared to the laser line. Along the laser line, no dispersion can be measured since any position being measured along the laser line is also hit by the laser light source, in effect overpowering the dispersion signal. On the other hand, scattered light would be measured along the line 12. When measuring scatter in this way it is possible, for example, to detect areas with bright reflection but low dispersion, which is typical in light (sound) knots.

The graph below illustrates the different results obtained when measuring across the laser

as in the present invention as recited in claims 1 and 9 and along the laser as disclosed by Luminari.



An important aspect of the present invention as recited in claims 1 and 9 is that range, intensity and "scattered light", also referred to as dispersion in the application, can be simultaneously measured. The dispersed light, which may be measured as the amount of light appearing by the side of the impinging light source after dispersing, or scattering, within the material, can be used to detect a number of defects which are not possible to discern with reflected light only. One such defect type is knots which are not dark in color, which is a common defect to find in soft wood, such as pine and fir.

In view of the above, Luminari does not disclose all elements of the present invention as recited in claims 1, 8, 9, 13, 14, and 16. Since Luminari does not disclose all elements of the present invention as recited in claims 1, 8, 9, 13, 14, and 16, the present invention, as recited in claims 1, 8, 9, 13, 14, and 16, is not properly rejected under 35 U.S.C. § 102(b). For an anticipation rejection under 35 U.S.C. § 102(b) no difference may exist between the claimed invention and the reference disclosure. *See Scripps Clinic and Research Foundation v. Genentech, Inc.*, 18 U.S.P.Q. 841 (C.A.F.C. 1984).

Along these lines, anticipation requires the disclosure, in a cited reference, of each and every recitation, as set forth in the claims. See *Hodosh v. Block Drug Co.*, 229 U.S.P.Q. 182 (Fed. Cir. 1986); *Titanium Metals Corp. v. Banner*, 227 U.S.P.Q. 773 (Fed. Cir. 1985); *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 1 U.S.P.Q.2d 1081 (Fed. Cir. 1986); and *Akzo N.V. v. U.S. International Trade Commissioner*, 1 U.S.P.Q.2d 1081 (Fed. Cir. 1986).

The combination of Luminari and Ervin does not suggest the present invention as recited in claims 2 and 7, which depend from claim 1, or claims 10 and 15, which depend from claim 9, since, among other things, the combination of Luminari and Ervin does not suggest a method or apparatus for imaging characteristics of an object that includes detecting light reflected from the object, detecting light exiting from the object after penetrating a surface of the object and being scattered by the object, creating a digital representation of the object based on the reflected and scattered light, and reading out from the digital representation information on a geometric profile of the object and information on the light scattered by the object in a predetermined area around the profile. As discussed above, Luminari does not suggest the present invention as recited in claims 1 and 9. Ervin suggests a compression method applied to a word processing system to increase the amount of text displayed within a screen on a display. Providing Luminari with the system suggested by Ervin would not overcome the above-described deficiencies of Luminari.

While claims 2, 7, 10 and 15 may recite elements of data compression, they depend from claims 1 and 9, which recite a method and apparatus for imaging characteristics of an object. Compression is utilized to achieve better performance of the method and apparatus. Data compression facilitates faster image transfer over an otherwise limiting interface and reduces the

amount of memory needed for storage, and the complexity of the processing. Neither Luminari nor Ervin suggest the method or apparatus for imaging characteristics of an object.

It appears as if the Examiner has misinterpreted Ervin with respect to summation and the logical "1". The "1" in question, the signal "FPM", is a digital signal coming from the operator. For example, Ervin states at col. 4, lines 44-46, "When the FULL PAGE MODE is switch-selected by the operator, the FPM signal 30 goes to a logical '1'". Ervin elaborates on this further at col. 5, lines 52-54, which state, "In the FULL PAGE MODE, signal FPMS 106 (derived from the word processing system's logic circuits and the operator-activated FULL PAGE MODE keyboard switch."

Furthermore, one of ordinary skill in the art would not combine Luminari and Ervin, since neither references suggests scattered light. In fact, since neither Luminari nor Ervin suggests scattered light, one of ordinary skill in the art would not look to either reference for a solution to imaging characteristics of an object utilizing scattered light. Additionally, since neither Luminari nor Ervin suggests scattered light, neither reference suggests the present invention as recited in claims 2, 7, 10, or 15. Therefore, the combination of Luminari and Ervin does not suggest the present invention as recited in claims 2, 7, 10 and 15.

The combination of Luminari, Ervin and Kableskov does not suggest the present invention as recited in claims 3-6, 11, and 12 since, among other things, the combination does not suggest a method or apparatus for imaging characteristics of an object that includes detecting light reflected from the object, detecting light exiting from the object after penetrating a surface

of the object and being scattered by the object, creating a digital representation of the object based on the reflected and scattered light, and reading out from the digital representation information on a geometric profile of the object and information on the light scattered by the object in a predetermined area around the profile. As discussed above, Luminari does not suggest the present invention as recited in claims 1 and 9. Kableshkov suggests a device for cumulative summation. In particular, Kableshkov suggests a database application where an array of values nominally received in a row-by-row fashion is to be summed to form column-wise sums, and this is done using an Relational Data Base Accelerator (RDBA).

Aspect of the present invention as recited in claims 3-6, 11, and 12 include using cumulative summation of selected rows rather than selected columns in the compression of the image data, not as a means to calculate the accumulated sum. In the RDBA suggested by Kableshkov, the target is the summation result. On the other hand, according to the present invention as recited in claims 3-6, 11, and 12 the summation result is used as a compressed descriptor of the summed values.

Regarding the Examiner's comments concerning analog versus digital means, Applicants believe that the Examiner has misread the Kableshkov patent. Along these lines, Kableshkov states that, "VAX F-format or IEEE S-format may be handled in an analogous manner." This means that these formats can be handled in the same way, not that they are handled in the analog domain rather than the digital domain.

In view of the above, Therefore, the combination of Luminari, Ervin and Kableshkov

does not suggest the present invention as recited in claims 3-6, 11, and 12.

In view of the above, the references relied upon in the office action, whether considered alone or in combination, do not disclose or suggest patentable features of the present invention. Therefore, the references relied upon in the office action, whether considered alone or in combination, do not anticipate the present invention or make the present invention obvious. Accordingly, Applicants request withdrawal of the rejection based upon the cited references.


In conclusion, Applicants respectfully request favorable reconsideration of this case and early issuance of the Notice of Allowance.

If an interview would advance the prosecution of this application, Applicants respectfully urge the Examiner to contact the undersigned at the telephone number listed below.

The undersigned authorizes the Commissioner to charge fee insufficiency and credit overpayment associated with this communication to Deposit Account No. 22-0261.

Respectfully submitted,

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